Claims

1. A method of treating a subterranean formation with a treatment fluid comprising a proppant including the steps of a) adding to the treatment fluid a noisy particulate material selected from the group consisting of explosive, implosive, rapidly combustible, and energetic particulate material, b) pumping said treatment fluid into the subterranean formation through a well, and c) allowing the discharge of said particulate material.

2. The method according to claim 1 further comprising detecting the acoustic signals generated by said discharge.

3. The method according to claim 2, wherein said method of treating is hydraulic fracturing.

4. The method according to claim 3, further including the step of inferring a dimension of a fracture based on the detected acoustic signals.

5. The method according to claim 1, wherein said discharge is initiated during the pumping phase.

6. The method according to claim 3, wherein said discharge is initiated during fracture closure.

7. The method according to claim 3, wherein said discharge is initiated after fracture closure.

8. The method according to claim 7, wherein said discharge is initiated after the well is put onto production.

9. The method according to claim 2, wherein said acoustic signals are detected by detecting means selected from the group consisting of geophones and accelerometers.

10. The method of claim 9, wherein said detecting means are placed on the ground surface.

11. The method of claim 9, wherein said detecting means are placed in a different well.

12. The method of claim 9, wherein said detecting means are placed in the well being treated.

13. The method according to claim 1, wherein the particulate material comprises hollow glass spheres.

14. The method according to claim 1, wherein the particulate material comprises a protective shell.

15. The method according to claim 14, wherein the particulate material comprises capsules including an explosive charge and a detonator within a protective shell.

16. The method according to claim 15, wherein the discharge of the capsules is initiated when the capsules undergo anisotropic stress.

17. The method according to claim 1, wherein the discharge of the particulate material is triggered by exposure of the particulate material to the treating fluid or a formation fluid.

18. The method of claim 17, wherein the particulate material is encapsulated into an enclosure that delays said exposure.

19. The method according to claim 2, wherein the particulate material allows the discharge to occur at more than one time.

20. The method according to claim 2, wherein the discharge of the particulate material is triggered by more than one means.

21. The method according to claim 2, wherein the particulate material is a mixture of explosive matter and detonators.

22. The method of claim 21, wherein the explosive matter comprises fibers.

23. The method of claim 21, wherein the explosive matter comprises a coating provided on at least part of the proppant.

24. The method according to claim 3, wherein the discharge is used to determine the time of the fracture closure and the closure pressure.

25. The method according to claim 1, wherein the noisy particulate material comprises a compound selected from the group consisting of lead azide, TNT, RDX, nitroglycerin dynamite, dBX and combination thereof.

26. The method according to claim 21, wherein the detonator comprises a compound selected from the group consisting of alkali earth metals, alkali metals and thermite systems.

27. The method according to claim 21 wherein the detonators and explosive matter are pumped during different pumping stages.

28. The method according to claim 21 wherein the detonators comprise a safety layer to avoid early detonation during pumping.

29. The method according to claim 21 wherein the explosive matter comprises a safety layer to avoid early detonation during pumping.

30. The method according to claim 1, wherein the discharge provides localized high rate fluid motion.